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Friday, June 3, 2005

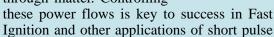
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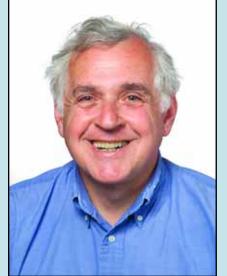
Teller Medal for Lab's Max Tabak

The Lab plays a key role in this year's Edward Teller Medals, awarded by American Nuclear the Society (ANS).

The two winners, Max Tabak and Joseph Kilkenny, both have close ties to LLNL.

Tabak, of AX Division, is best known as the lead inventor of Fast Ignition, a technique that uses ultrapowerful short pulse lasers to directly ignite pre-compressed fusion fuel. His current research involves understanding how gigaampere currents of relativistic electrons propagate through matter. Controlling





Max Tabak

lasers.

The ANS is honoring Tabak for being "...an effective mentor and group leader, whose team has made major contributions to a broad range of topics in Inertial Confinement Fusion (ICF) and highenergy-density physics and has stimulated advanced research all over the world.'

"I am honored to receive this reward," Tabak said. "I came to Livermore to work on developing thermonuclear fusion as a safe and inexhaustible energy source 25 years ago.

See TELLER MEDALS, page 4

Lab environmental effort rewarded for innovation with pollution prevention awards

The Laboratory's effort to eliminate waste received two Pollution Prevention Awards from the Department of Energy/National Nuclear Security Administration.

Jerald Paul, principal deputy administrator of NNSA, presented the awards to two Lab teams during a break in Science Day activities last week.

"These awards demonstrate outstanding leadership in improving environmental performance," Paul said. "I am impressed by the ingenuity behind these awards. It is clear that, through awards such as these, NNSA has moved well beyond a role of environmental compliance and into a greater role of stewardship.'

Bill Bookless, associate director of Safety and Environmental Protection, credited the Lab's teamwork in making its pollution prevention efforts a success. "This work spans the entire Lab," he said. "It requires embed-

See POLLUTION, page 7

Study links warming of oceans to human effects on global climate

By Anne M. Stark

NEWSLINE STAFF WRITER

The warming of the world's oceans is a clear signal of human effects on global climate.

This is the bottom-line conclusion of a joint study by scientists at the Lab's Program for Climate Model Diagnosis and Intercomparison (PCMDI) and the Scripps Institution of Oceanography.

The new study — which also involved scientists at the University of Reading and the National Center for Atmospheric Research — compared climate model simulations with observed estimates of how ocean temperatures changed over the second half of the 20th century.

Previous research by lead author Tim Barnett of Scripps had linked recent ocean warming to human activities.

The new work significantly strengthens this conclusion. It focuses on the complex vertical structure of ocean warming and shows that computer models capture this structure if they are run with combined changes in man-made forcings (well-mixed greenhouse gases, ozone and sulfate

See CLIMATE, page 8

Lab rolls out new program for recognition and awards

A new Recognition and Awards Program, designed to ensure consistent and equitable use across the Laboratory,

is being rolled out this month.

The Recognition and Awards Program is part of the Integrated Performance and Pay Program (IPPP), which includes an assessment of all performance and pay programs to ensure

they are aligned with the market, reflect best practices and improve consistency across

See AWARDS, page 4

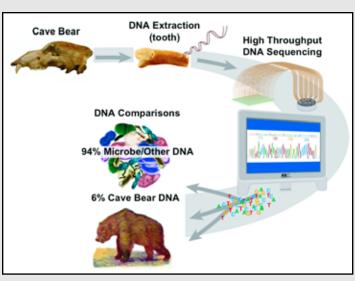
JGI sequences DNA of extinct cave bear

By David Gilbert

NEWSLINE STAFF WRITER

High in the Austrian Alps, more than 40,000 years ago, some hapless cave bears met an untimely death. Fastforward to modern times, when bits of DNA extracted from bones and teeth from these Pleistocene churned through the sequencers at the DOE Joint Genome Institute (JGI).

See CAVE BEAR page 7





Assessing Einstein's legacy

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Poetry in motion

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Site 300 safari

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Lab community news

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The **Lab blood drive** starts today and runs through June 9 in Trailer 4675 (the old central cafeteria). Donors are encouraged to schedule an appointment in advance

on the web at http://www.beadonor.com/ and click on the word registration. The drive sponsor code is LLNL. Individuals without Internet access can schedule an appointment by calling the LLESA Office, 2-9402. Donor eligibility questions should be directed to the American Red Cross at 510-594-5143.

A new Employee Assistance Program, "Care for the Caregiver," will be held on Mondays, beginning today, from noon to 1 p.m. through July 25 in Bldg. 571, room 1301/1335. The new eldercare support program is designed for LLNL workers who are caregivers for aging or ill parents. During this eight-week program, participants will discuss the stresses and challenges of being a caregiver and address the importance of self-care, health and emotional wellbeing during the process. For more information contact Fran Pagliocca, 2-9339, or pagliocca2@llnl.gov.



LLNL's Administrative Workshop will be held today from 8 a.m. to 4:30 p.m. at the Martinelli Event Center in Livermore. The Biosciences and Nonproliferation, Arms

Control, & International Security (NAI) directorates are co-sponsoring the annual event for non-exempt administrative support. This year's theme is "Define and Embrace Your Power." Keynote speaker Jeanne-Marie Grumet will present "Living with Purpose and Passion." The goal of the workshop is to improve communications between directorates, provide information about the Lab's mission and program and highlight the important role of nonexempt administrative support in the Lab's operations. Call Charlene Morris for more information at 3-9483.

Applications for **Student-Employee Graduate Research Fellowships (SEGRF)** for UC students are now being accepted through June 30. LLNL, in partnership with the University of California, provides graduate research fellowships for students to carry out research in subjects related to the goals and missions of the Laboratory. This research must be part of the student's pursuit of a Ph.D. degree and must be carried out at LLNL. Fellowships will be awarded on a competitive basis, using the criteria described on the Web, at http://segrf.llnl.gov.

"Technology Today," a television show produced by the Public Affairs Office commemorating the "World Year of Physics 2005" will be shown daily, every half hour, on Lab TV channel 4. The program can also be seen on Ch. 30, CTV, the cable access channel in the Tri-Valley. This special program focuses on how Albert Einstein's discoveries have influenced nearly every endeavor at LLNL. Lab researchers featured include: Bill Goldstein, Neil Holmes, Bruce Remington, Jeff Wisoff, Tammy Jernigan, Bill Craig, Simon Labov, Ed Moses, Bruce Tarter, and Michael Anastasio.

A gaggle of geese



JACQUELINE McBride/Newsline

Two families of Canada geese nested at the Laboratory this spring. Geese crossing signs have been placed near the areas where the geese travel: Bldgs. 481, 482, 551 and the Central Café. Wildlife biologists suggest employees do not feed or interact with the geese, but watch out for the birds when driving on site.

RETIREES' CORNER

Mitch Waterman, team leader of the Space Action Team at LLNL, wishes to thank all retirees who have helped with valuable information regarding possible hazards in obsolete buildings slated for demolition. The significant contributions made by retirees are greatly appreciated.

Den Fisher (July 2004, Directors Office, AD for Safety and Environmental Protection) and his wife, Molly, just returned from a two- week trip to Ecuador and the Galapagos Islands. They spent four days in the highlands in and around Quito visiting the Indian markets and villages and touring the City. Then they spent eight days on a boat visiting the Galapagos Islands National Park. It was a pretty physical trip, with a twohour hike and an hour of snorkeling every morning and afternoon. The wildlife was incredible in terms of its diversity, density, and lack of fear of man. The trip was made all the more interesting by political unrest and demonstrations that resulted in the ousting of President Gutierrez while they were in transit to Ecuador. As a result, they spent a night in Miami waiting for things to calm down, but after that the trip went smoothly. Den's e-mail: fisher.dennis @comcast.net.

At the end of April, **Jane** (Mechanical Engineer, 1993) and **Gus** (Engineering Directorate, 1993) **Olson**, and **Jackie and Alan** (**R-Division** (NAI Directorate) June, 2000) **Mode** went for a cruise, "In the Steps of Lewis and Clark." The small-boat cruise covered the Columbia and Snake Rivers from Astoria, Ore. to Clarkson, Wash. with a jet boat trip up Hell's Canyon. The trip required the passage of eight locks — four on the Columbia and four on the Snake — including the highest vertical lift lock in the world, the John Day Lock and Dam.

Several of the sites visited during the trip had been occupied by "The Corp of Discovery" exactly 199 years before as chronicled in the journals of Lewis and Clark. The history of Lewis and Clark from almost 200 years ago was present every day, in every vista. It made the history of the northwest "come alive" for everyone on board. Alan's e-mail: amode@ix.netcom.com

Bill (Engineering, 1989) and **Sue** (Engineering, 1983) **Simecka** are keeping very busy in Sun City Anthem. They welcomed their first great-granddaughter on Bill's birthday. They are both involved in the local Performing Arts Club. Sue is dancing in their next show, "Hooray for Hollywood," performing "Dancing Queen" from "Mama Mia." She and her partner made

all three of their costumes. She is also co-anchor for the Sun City TV station on a once-a-week show.

Bill enjoys working backstage with microphones, curtains, sounds, etc. He also plays pool in the Billiards' Club. They belong to two gournet groups that they enjoy very much. E-mail: sbsimecka1@aol.com

The last meeting of the year for the **Travel Group** will be on Tuesday, June 28, at 2 p.m. at the Community Room of the Livermore Police building, 1110 South Livermore Avenue. The topic is "India: North to South," by Susan and Brian Mayall.

The **Annual Retirees' Picnic** will be held at Ravenswood Park, 2647 Arroyo Road, Livermore on Wednesday, June 15 (park opens at 11 a.m. with lunch served at noon). A printable reservation form is at: www.llnlretirees.org. This event usually sells out, so ensure your reservations with a check by June 10.

Please send any input to Jane or Gus Olson. E-mail: AugustO@aol.com or JaneRubert@ aol.com. Phone: (925) 443-4349, U.S. mail address: 493 Joyce Street, Livermore, CA 94550.

Newsline

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Friday, June 3, 2005

Laying the groundwork for Einstein's great discoveries

By Bob Hirschfeld

NEWSLINE STAFF

No one disputes that Albert Einstein was a genius, whose discoveries have advanced the course of human history. But much of his seminal work was presaged by 19th century physicists who laid the groundwork in areas of electromagnetism, gravity, light and matter.

That's the opinion expressed by physicist C. W. Francis Everitt of Stanford's W. W. Hansen Experimental Physics Laboratory, who addressed an LLNL audience last week as part of the Director's Distinguished Lecturer Series.

Everitt said Einstein had the good fortune to be working in a Swiss patent office while he was writing his physics papers. This freed him from the rigors of an academic environment, as well as instilling in him the process of identifying key data and distilling it from general information.

Einstein himself once wrote, "I soon learned to scent out that, which was able to lead to fundamentals and to turn aside from everything else, from the multitude of things that clutter up the mind and divert it from the essential."

Einstein's first paper — regarding intermolecular forces — was published in 1900. It was



JACQUELINE McBride/Newsline

C. W. Francis Everitt

followed by three papers on statistical mechanics, and then in 1905, by his three most important works, on special relativity, molecules and Brownian motion, and quanta and the photo-

electric effect.

According to Everitt, Einstein relied on, and then advanced, previous research by Johann Josef Loschmidt, Wilhelm Wien, John William Strutt (aka Lord Rayleigh), Wilhelm Pfeffer, Max Planck and especially James Maxwell. Einstein's brilliance shone in his lucidity, and his ability to rectify discrepancies that existed between some of his predecessors' theories.

Everitt concluded his remarks with a guided viewgraph tour of NASA's Gravity Probe B satellite, which is designed to test two unverified predictions of Einstein's general theory of relativity. The satellite's mission control room is located at Stanford, and Everitt is one of the 26 physicists involved in the project.

The satellite, launched last year, uses four gyroscopes to discern tiny changes in the direction of the Earth's spin. They are intended to provide an almost perfect spacetime reference system, thus measuring how space and time are

warped by the presence of the Earth, and how the Earth's rotation drags space-time around with it.

Laboratory's new Central Café services and improvements

Since the opening of the new Central Café in February 2004, more employees have been taking advantage of the beautiful setting and spacious dining room to hold meetings and conduct work.

The Café recently installed a wireless network that will soon be evaluated by a select group of users with the intent of expanding the service to a larger audience. With that in mind, Business Services and Eurest Dining have partnered to make food service available to employees throughout the day.

During the hours of 9:30 to 11:30 a.m., the café will now offer a "grab-and-go" service consisting of pastries, pre-made sandwiches, salads, snacks and beverages.

Full service lunch will be served as usual from 11:30 a.m. to 1:30 p.m.

To keep food service available into the early afternoon, the Central Java Wave will sell a selection of sandwiches, salads and pastries from a grab-and-go cooler from 1:30 to 2:30 p.m.

These initiatives will provide employees with an extra three hours of limited food service at the Central Cafe each day. The West Cafe will also extend its hours by offering morning grab-and-go service from 9:30 to 11:30 a.m.



The Central Cafe will also improve traffic flow and service in the beverage area. Beginning June 7, a redesigned beverage counter will be in place, which should minimize congestion and allow the orderly

dispensing of cups, lids, and beverages. In preparation for the modification, bottled sodas and water will only be available Friday, June 3 and Monday, June 6 at the Central Café.

CDC releases repellent guidance for mosquito season

With the summer vacation season here, Americans have more options than ever to protect themselves from mosquito bites. The Centers for Disease Control and Prevention (CDC) has released new guidelines for effective mosquito repellents available in the United States.

The updated guidance includes the addition of two active ingredients — icaridin and oil of lemon eucalyptus — that have been shown to offer long-lasting protection against mosquito bites. Repellents containing DEET continue to be a highly effective repellent. The length of protection from any of these products is dependent on their formulation and frequency of use.

Picaridin, also known as icaridin or KBR 3023, is an ingredient found in many mosquito repellents regularly used in other countries. Evidence indicates that it works very well, often comparable with DEET products of similar concentration. One product, containing 7 percent picaridin, is being distrib-

uted in the United States for the first time this year. The other repellent is oil of lemon eucalyptus (also known as p-menthane 3,8-diol or PMD), a plant-based mosquito repellent that provided protection time similar to low concentration DEET products in two recent studies. It is available in a variety of formulations throughout the United States.

The Health Services Department recommends using a repellent and covering up (long sleeves, pants and socks) anytime you go outside, especially during prime mosquito biting hours, between dusk and dawn. Follow the label instructions, and if you start getting bitten, re-apply repellent. Talk to your doctor before you use insect repellents on young children. Do not use insect repellents with DEET on children younger than two months. Do not use repellents containing more than 10 percent DEET on children younger than two years.

According to Keith Sheirich, a nurse practitioner in Health Services, mosquito season has already begun in most

parts of the country. With an increase in the mosquito population comes the risk of West Nile Virus (WNV) or other infections spread by mosquitoes. Human WNV infection ranges from asymptomatic in the vast majority (80 percent) of those infected, to severe illness with meningitis/encephalitis in about 1 in 100 to 1 in 150 of those who become infected. Five to 10 percent of those with severe illness, or fewer than 1 in 1,000 of those infected, die. Twenty percent develop a mild flu-like illness.

The elderly, the very young and those with suppressed immune systems are most at risk for developing the severe form of WNV. No cases of WNV were reported in Alameda County in 2004 or 2005 in either horses or people (see http://www.acgov.org/PublicHealth/wnv/).

To learn more about how to protect yourself and your family from West Nile Virus, visit www.cdc.gov/westnile and/or Health Services' Website (http://www-r.llnl.gov/healthserv/News/westnile.html).

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News you can use

TELLER MEDALS

Continued from page 1

Now, more than ever, this continues to be a worthy goal and I am excited by our prospects of achieving it."

Kilkenny was leader of the Lab's ICF program in 1995. Experiments he initiated were the basis for favorable recommendations of the National Academy of Sciences on constructing the National Ignition Facility. He now serves as vice president for Inertial Fusion Technology at General Atomics in San Diego, and associate director for Science and Technology at the Laboratory for Laser Energetics of the University of Rochester in Rochester, New York.

Two Edward Teller Medals are presented biannually by the ANS Fusion Energy Division, to recognize pioneering research and leadership in inertial fusion sciences and applications. The award is named in honor of LLNL's co-founder and former director, the late Edward Teller. He is recognized worldwide as a pioneer in inertial fusion sciences.

This year's two winners will each receive a sterling silver medal bearing the likeness of Dr. Teller and a \$2,000 honorarium. The presentations will take place this fall at the Fourth International Conference on Inertial Fusion Sciences and Applications (IFSA2005) in Biarritz, France.

AWARDS

Continued from page 1

Recognizing and rewarding performance is one of the Laboratory's core values. The Recognition and Awards Program provides a way to acknowledge individual and team achievement.

The program is the product of a survey action team (SAT) recommendation to "improve and broaden support for the Laboratory's awards and recognition program" and replaces a pilot effort launched in 1999.

The program was designed with the assistance of the directorate awards coordinators and the involvement of staff members from Legal, Finance, Audit and Procurement.

Key changes include:

- Institutional guidance on levels and amounts of awards.
- Emphasis on rewards commensurate with level of achievement.
- LLNL Recognition & Award Program vouchers for LLESA purchases (vouchers are replac-

Recognition & Awards	Bronze	Silver	Gold
Value	Total value: \$0 – 100 per individual. Cash and/or non-cash awards.	Total value: \$100 – \$500 per individual. Team members' awards not less than \$50 each. Cash and/or non-cash awards.	Total value: \$300 – 1,500 per individual. Team members' awards not less than \$100 each. Cash award.
Standards/Criteria	A commendable achievement or contribution that has an impact typically at the work unit or group level.	A significant achieve- ment or contribution that has an impact typi- cally at the division or department level.	A distinctive achievement or contribution that has a notable and lasting impact on the mission or infrastructure typically at the directorate and/or institutional level.

ing gift certificates).

Logo memorabilia limited to \$75 or less per event.

The table above summarizes key program components.

The Recognition and Awards voucher procedure (replacing the existing gift certificate pro-

gram) was effective May 27. Some directorates have already transitioned to the new program ahead of the scheduled Oct. 1 date for Lab-wide implementation.

The Recognition and Awards Program guidelines, procedures and Q&A's are available on the IPPP Website: http://www-r.llnl.gov/IPPP/.

Technical Meeting Calendar

Friday

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INSTITUTE FOR GEOPHYSICS AND PLANETARY PHYSICS

"The Blue Quasar Conspiracy: Maybe We Need a Recount," by Robert Becker, UC Davis. Noon, Bldg. 319, room 205. Property pro-

tection area. Foreign national temporary escorted building access procedures apply. Contact: Wil van Breugel, 2-7195, or Lisa Lopez, 3-0250.

LIVERMORE PROJECTS COMMITTEE

"Vision Strategy & Structure in the Global Nuclear Enterprise: Eisenhower and the Search for Gesamtkonzept," by Victor H. Reis, Hicks & Associates Inc. "Dynamic Enterprise Models," by Cliff Shang, LLNL. 8:45 a.m., Bldg. 132 auditorium. All attendees must have an SP access card or obtain special approval to attend this meeting. For LLNL, contact Barbara Sherohman, 3-6379, with any SP access questions. For SNL, contact Ann Stayton at 925-294-2582 with any SP access questions. Contact: Scott Couture, 3-4100, or Frances Mendieta, 3-7825.

CENTER FOR APPLIED SCIENTIFIC COMPUTING (CASC) / INSTITUTE FOR SCIENTIFIC COMPUTING RESEARCH (ISCR)

"Autonomic Computing: The Next Era to Design and Program High Performance Computing Systems and Applications," by Salim Hariri, University of Arizona. 10 a.m., Bldg. 453, room 1001, Armadillo Room. Property protection area. Foreign national temporary escorted building access procedures apply. Contact: Ghaleb Abdulla (CASC), 3-5947, or Erica Dannenberg, 3-2617.



CENTER FOR APPLIED SCIENTIFIC COMPUTING (CASC)/INSTITUTE FOR SCIENTIFIC COMPUTING RESEARCH (ISCR)

"A Numerical Study of Resistivity Effects for a Compressible MHD Model," by H. C. Yee, NASA Ames Research Center. 10 a.m., Bldg. 453, room 1001, Armadillo Room. For more information, see URL (http://www.llnl.gov/casc/calendar.shtml). Property protection area. Foreign national temporary escorted building access procedures apply. Contact: Bjorn Sjogreen (CASC), 3-9075, or Erica Dannenberg, 3-2167.

PHYSICS & ADVANCED TECHNOLOGIES DIRECTORATE-WIDE SEMINAR

"Future World Energy Demand and Supply: China and India and the Potential Role of Fusion Energy," by John Sheffield, Joint Institute for Energy and Environment, University of Tennessee. 2 p.m., Trailer 2128, room 1000. Common use facility. Foreign nationals may attend. Contact: John Lind, 2-5430, lindl1@llnl.gov, or Alan Wootton, 2-6533, wootton1@llnl.gov.



ADMINISTRATIVE INFORMA-TION SYSTEMS DEPARTMENT

"Oracle Workload Measurement," by Andy Rivenes. 10 a.m., Bldg. 361, room 1140. Property protection area. Foreign

national temporary escorted building access procedures apply. Contact: Larry Snyder, 3-0121.

UNIVERSITY RELATIONS PROGRAM

"Optimal Delay of a Covert Nuclear Weapons Development Program," by W. Matt Carlyle, associate professor, Operations Research Department, Naval Postgraduate School. 1 p.m., Bldg 361, room 1140 auditorium. Reception to follow in Trailer 3649, room 1050. Property protection area. Foreign national temporary escorted building access procedures apply. Contact: Cheryl Kuks, 3-5643, or Nancy Huppler, 3-4256.



HAZARDS CONTROL DEPARTMENT

"High Efficiency Metal Filters," by Ken Rubow, Mott Metalurgical. 9-10 a.m., Bldg. 255, room 110. Property protection area. Foreign national temporary escorted building access procedures

apply. Contact: Werner Bergman, 2-5227.

ENGINEERING, COMPUTATION AND E&E (CO-SPONSORS)

"Constructal Theory of the Generation of Flow Configuration," by Adrian Bejan, Duke University. 10:30-11:30 a.m., Bldg. 453, auditorium, room 1001. Property protection area. Foreign national temporary escorted building access procedures apply. Contact: Wayne Miller, 4-4472.

ENGINEERING

Seminar series: "Global Energy Security, Renewable Energy, and Roadmap to a Hydrogen Economy. World Energy Resources," by Gunnar Tamm, United States Military Academy. 1:30 p.m., Bldg 571, room 1335. Contact: Lara Page, 2-0553.



INSTITUTE FOR GEOPHYSICS AND PLANETARY PHYSICS

"Formation and Evolution of Massive Galaxies," by Patrick McCarthy, Carnegie Observatories. Noon, Bldg. 219, room 163. Property protection area. Foreign

national temporary escorted building access procedures apply. Contact: Wil van Breugel, 2-7195, or Lisa Lopez, 3-0250

The deadline for the next Technical Meeting Calendar is noon Wednesday.

Friday, June 3, 2005

Local students win Lab's Year of Physics contests

The theme was physics, the art forms were posters and poetry, and the winners have been announced.

Judging of the Lab's "World Year of Physics" student poster and poetry contests, sponsored by the Public Affairs Office, took place last week.

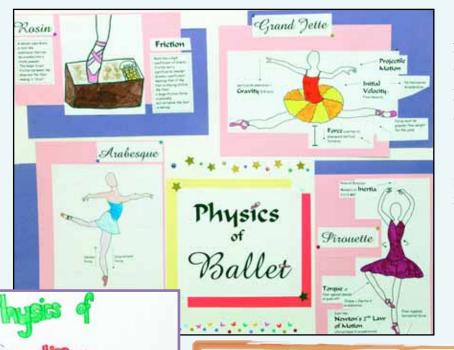
The poster contest was open to 4th and 5th graders who combined artwork with their scientific knowhow to show how physics is involved in everyday life.

The winning entries were: Jessica Choi, of Livermore, a fourth-grade student at Celebration

Christian Academy, whose poster theme "physics of ballet," illustrated various ballet movements and their application to physics, notably Newton's Laws of Motion; and, Stephanie Silveira, a fifthgrade student from Livermore's Smith Elementary School, whose poster theme "physics of gymnas-

tics," depicted the energy a body uses to perform various gymnastic movements. Each student received a prize of \$50.

High school students from Livermore and Pleasanton who participated in the poetry contest were asked to express what moves them about physics. Stephanie Willis, a student at Livermore High School, received a \$100 prize for her winning poem that blends the laws of physics with human attraction.



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Jessica Choi of Livermore, a fourth-grade student at Celebration Christian Academy, stepped into the winning category with her depiction of the physics of ballet, left.

Poster contest winner Stephanie Silveira, a fifthgrade student from Livermore's Smith Elementary School, exercised her creativity to illustrate the physics of gymnastics, lower left

World Year of Physics 2005 Poetry Contest Winning poem by Stephanie Willis, Livermore High School

I. For every action, there is an equal and opposite reaction.

Nine PM and nine freckles from the stretch of skin
between your neck and your eyelashes:
I inhale love; exhale fear. You have taken me
over and every kiss is enough to leave me
thanking gravity for keeping me close
to the ground.

II. An object in motion tends to stay in motion unless acted upon by an unbalanced force

Liberation and loneliness: I run out your door too afraid to look back. But you, football player build and scientist eyes, you reach for me, and I forget why I was running in the first place.

III. The acceleration of an object is directly proportional to the magnitude of the net force

So together, we take the world by storm, everything is different when we're together and I think Newton would be proud.

Electrical safety requires workers to beware of live wires

Dan Benjamin offers this advice to Lab employees who are authorized to perform work on LLNL electrical equipment and circuits: Understand the golden rule for working with electricity and carefully heed procedures before performing "energized" work.

According to Benjamin, leader of Hazards Control's Occupational Safety Section, the golden rule says that any time a worker might be exposed to energized or "live" electrical equipment or circuits, work should not begin until the equipment has been de-energized and the energy source has been locked out and tagged.

Laboratory policy, in general, is that work should be done on de-energized parts only. All efforts should be explored on how this can be accomplished. In very limited cases, some special exceptions will be made (to be used infrequently), observes Benjamin.

Special permission to work "live" can be granted by senior program management when de-energizing the equipment creates its own hazard — for example, shutdown would affect a security system or a safety system such as an oxygen deficiency monitor or radiation detector, and monitors required to be in service during the electrical work period.

Special permission to work "live" may also be granted by senior program management when the work absolutely requires it — for example, during testing and troubleshooting. "Obviously, if you are trying to test for electrical characteristics you can't turn the equipment off," Benjamin said.

Benjamin says that workers should avoid the assumption that because they are qualified to do so, it is

okay to work "live."

They should also avoid the assumption that because they have proper personal protective equipment (PPE) such as gloves or shields, or are trained to use and will be using-insulated tools, it is okay to work "live."

"In situations where PPE and insulated tools are required to work "live," just having them does not in itself allow you to work on energized systems," Benjamin explained. "Specific management authorization and an approved work procedure/safety plan are also required."

Employees planning to do electrical work "live" must have discussed the situation with their supervisor, senior program management, and the ES&H Team, and together concluded that there is no other way to get the work accomplished. Then they must develop a safety plan that lists the worker's qualifications, tools, and PPE that will be used, as well as the specific steps that will be taken to avoid hazards. Senior management approval is required.

In certain situations, a companion or safety watch must accompany the worker while the "live" work is being undertaken. Guidelines for working on energized equipment are detailed in Appendix A of Document 16.2 of the ES&H Manual. The guidelines contain a table on work controls for energized systems based on their hazard class. The hazard class is based on potential contact with exposed or energized parts.

Benjamin said the Laboratory is in "good shape" safetywise with respect to electrical work in that energized work is strongly discouraged. When working on

energized parts, most of the Laboratory people are Plant Engineering craft personnel who are following what Benjamin describes as a "really good procedure." This procedure was developed by Plant Engineering several years ago, and included input from Keith Gershon, who served until recently as Hazards Control's electrical safety subject matter expert. The procedure IWS 12005 — Working on or Near Energized Equipment Rated 50-600 Volts AC — can be obtained through PE's Website (http://www-r.llnl.gov/plant_eng/safety/ism/iws.html).

Gershon says it is important that programmatic employees heed the policy to de-energize equipment too. However, if they must do energized work, program personnel should become as equally versed as Plant Engineering personnel in procedures for working on energized systems. "Since they don't do this kind of work every day, procedures for working 'live' do not get reinforced on a regular basis," explained Gershon, adding:

"People in the programmatic areas need to know that when they are assembling their experiments, testing them, working on them, and adjusting them, even if they don't intend to touch the wires, that just taking covers off the boxes is considered doing energized work. So, they need to be aware of how to protect themselves."

Benjamin reiterated that energized work procedures are addressed in ES&H Manual Document 16.2, Work and Design Controls for Electrical Equipment. Information is also available from Industrial Safety Engineers on each ES&H Team.



CLASSIFIED ADS

See complete classified ad listings at https://www-ais.llnl.gov/newsline/ads/

AUTOMOBILES

1997 - Chev Astro, LT, 77K miles, runs great, loaded, seats 8, rear air & heat, power everything \$6,200 OBO 925-294-8182

1995 - Lexus SC300, Dark Blue, Runs Great! Fully Loaded! Just replaced Alternator and Drive Belt. 94K, \$10,300 925-373-0751

2002 - GoldAcura TL,30kmiles, 100k warranty,auto,cd,leather, clearcoat in/out,tinted rear windows, sunroof,a/c,KELLEY \$19,135 510-793-5717

1988 - ford escort, auto. excellant run around car. \$800 or best offer. 209-825-7702

2003 - Motorhome, Class C, Coachmen Freedom, Chevy C3500 Chassis, 5.7L gas engine, sleeps 6, 12,000 miles, like new Asking \$42,000.00 209-835-0793

1971 - Olds 442 Coupe, 455ci/th400, all power options, runs well, many new parts, needs paint/interior work, comes with parts car. \$8000 OBO, 925-294-3190

2002 - Nissan Pathfinder SE /4x4/ 5spd. manual, 34,200 miles, \$21,900 OBO /excellent condition/ Offroad package plus.... 925-321-6925

1993 - Jeep Wrangler,163,000 miles,6 cyl 5speed,2in lift,hard and soft tops, excellent cond. \$7000 OBO 925-580-8732

2001 - Nissan Pathfinder SE Sport Utlity 4D mileage 83000 v6 3.5Liter Automatic 4WD DVD Air Roof Rack \$15K #00811 925-447-3912

2000 - Dodge Ram 3500 Van/15-passenger commuter vanpool. I am moving and riders do not want to take over vanpool. Must sell. \$6,500 obo. 209-892-

1991 - 190E MBZ, Sedan 4 dr.6-cyl. 2.6 liter \$8,000.00 Auto/P.Steering P.Seats/AC/ CC/PW/PDL/CD,Tan Leather int./ABS(4-Wheel)/Prem. Chrome MBZ Whls. 209-529-0431

AUTOMOBILE ACCESSORIES

4 Firestone Wilderness AT tires P265/75R16-1145M/S used about 20,000 mi. \$ 125.00 obo. 925-447-6824

Custom car cover for a Chrysler Sebring brand new, make offer. 925-447-6942

Pick-up bed cover, fits 94-2002 Dodge 8 ft bed, \$400.00 or best offer. 925-961-1658

C-4(91-96) Corvette Stock AM/FM -Tape Bose radio \$175.00, Stock C-4 cat back exaust system \$150.00 925-447-6821

BOATS

35HP Evinrude outboard with gas can, electric start, shift cables and more. 766-8233 Make Offer. 925-516-2570

1995 19 ft. ChrisCraft open bow ski boat with tandem trlr. 5.0L V8, EFI, Bimini top, Wake Board Tower, CD player, lots of toys. \$12,000 510-538-7444

GIVEAWAY

Approximately 10x12 foot neutral beige carpet. Good condition. 925-735-0493

Metal trundle bed frame. 925-426-8452

Lawn Mower - 1998 model push. Probably works, but hasnt been started in years. Needs tune up? Yours for pick up 510-719-6057

Fancy rat babies born 5/12/05. Not feeders, please! Babies range from platinum to tan to B&W. Great pets! 925-625-9159

Yashica 300 Auto Focus mm 35 SLR camrea with zoom and extra macro lens. Like new but does not work. 925-455-9409

A set of shower doors. You pick them up and they are yours! 925-245-9934

Free dryer. ~8 years old. May need a heating element soon, but still kicking. 925-371-0585

Household

White sofabed frame. You add the futon. 766-8233 Make offer. 925-516-2570

Mitsubishi 35inch TV console with walnut cabinet, picture-in-picture, cableready tuner, top-of-the-line unit, fantastic picture. \$175 415-543-3643

Garage sale Sat., June 4. Clothing, toys, household items, 1896 Keeler St., Livermore. From East Ave: south onto Charlotte, 1st right, then 1st left. 925-606-6155

Solid Oak Entertainment

Center \$150 or BO Patio Furniure w/ Four Chairs \$85. cell((925)200-4525 925-462-1899

Redwood picnic table for 6-8 people. Good condition. \$50.00 OBO. Canning jars, various sizes. \$10.00. 510-582-2938

Oversized Love Seat and matching Chair. White with embroidered print. Excellent condition. Must See. \$150 OBO. 925-964-0534

Rival chrome plated electric food slicer 7 1/4 inch blade \$40 Deluxe folding iron board \$12 925-735-6002

Color Television, 19inch, Works great, No remote \$35 925-552-6684

4-family GARAGE SALE 9am-3pm Sat/Sun Jun4-5 at 5645 Woodrose Way, LVRMR: Play structure, NordicTrak, clothes, toys, furniture & much MORE! 925-373-0795

Multi Family Garage Sale - Sat 6/4, 8am-2pm, 4042 Drake Way, Livermore. Furniture, bikes, housewares, kids clothes, and much more. 925-606-4263

Med Oak Entertainment center with overhead light, 5 ft wide, 6 ft tall 16 in deep \$75 925-447-8890

Sofas, Blue/White small plaid print, exc cond 8 ft \$160 7 ft \$130 925-447-8890

Tub/shower enclosure doorshead rail 57.5 in., bottom rail 56 in.-rain pattern on glassgreat condition. \$65.00 209-830-7978

Cherrywood corner curio int.shelves lites \$300. Yamaha elec spinet piano w/metro/ sounds plus recording \$950. Coffee tbl glass top. very nice \$300 209-786-5967

Tall dressr\$70, dressr w/mirror\$100, blck rod iron daybd \$90, comfter,5 pillowcover & curtains\$45 all obo 2 new dresses 16 & 12 \$20 each. pics yes 510-750-7208

16in Reel Push Lawn Mower, Exc. Cond, \$20 650-424-1202

Queen Sleeper Sofa for Sale-excellent condition -\$400 Mattress still in original plastic wrap. Blue, green, white plaid. 4 pillows + slip cover 510-828-

MISCELLANEOUS

Computer desk, small,

assembled, \$25. Hand mitre saw, \$20. Pop-up trundle, not entire day bed, \$10. 925-706-2088

BUFFY THE VAMPIRE SLAYER DVDs. Season One. \$16. Great for Buffy or Angel fans, kids or kids at heart. Commentaries & inserts. Paid \$40; viewed once. 925-634-1110

4-family GARAGE SALE 9am-3pm Sat/Sun Jun4-5, 5645 Woodrose Way, LVRMR: Play Structure, Scuba-tanks, clothes, toycollectables, furniture! 925-373-0795

Baby Items-Stylish white crib, changing table, bassinet. Tan Gingham print Highchair, Graco pack-n-play, Graco swing. All items negotiatable. 925-367-3595

Kenny Chesney concert tickets, June 16 at Oakland Arena, Sec 217, Row 13, Seats 5,6,7,8; \$60 ea 925-447-3091

Display case, glass front, wood framed two sliding rear doors 48in.L 38in.H 24in.D \$125.00 obo. 925-447-6942

Ships clock solid brass 9 inch in diameter. Solid brass inclinometer. Both mounted on board \$90.00 VCR victory at Sea New \$20.00 925-447-6099

Band Saw, horizontal 1hp 7 X 12 metal cutting with coolant pump, Central Machinery brand,450\$ 925-454-8516

Motorcycle wind shield, mounting hdwr. Black w/dark gray shield GIVI, was on 2000 Buell M2, will fit any tube frame bike. Beautiful, racy. \$70 obo. 925-321-3600

MOTORCYCLES

1998 - BMW R1100RT, Great shape,All bags, new tires & brakes, just serviced and tuned,115k miles Ready to Ride! \$4700.00 209-599-4644

2004 - GSX-R750 w/Yosh pipe, fender eliminator kit, K&N air filter, more. \$9,000 obo. Pictures avail. 209-896-6440

MUSIC INSTRUMENTS

Fender mandolin. Rarely used, excellent condition. Paid \$250, asking \$100. 925-321-3600

PETS & SUPPLIES

Dog Cage, wire breakdown model, 24 wide x 36 long x 28 high. \$20.00 925-961-

1658

AKC GERMAN SHORT-HAIR POINTER PUPPIES 4 sale two males and 3 females left. E-mail 4 pics.Great hunting and family dog. 925-447-4479

Looking for animal lovers who want to help save lives by providing a temporary home for homeless pets. 925-980-3035

Fancy rat litter of 11! Kittens born 5/11/05. Smooth coats with colors ranging from Russian Blue to Champagne and more. \$5 - \$10 each. 925-625-9159

RECREATION EQUIPMENT

Ladies golf clubs, Wilson Precision graphlite; full set irons, woods, putter and bag - \$125. 925-706-2088

Baby Jogger, highest quality, excellent condition, \$100. 925-484-3847

Weber Silver Genesis Bar-B-Que, good condition, just in time for summer. \$200 925-447-8890

Red Ball chest waders, size 12, good condition, \$20.00. 925-961-1658

Wakeboard: 2002 Nelson Pro 142 Double-Up (fishbone graphics). Includes 1.5 cleaver Rainbow fins. A REALLY fun board! \$150. 925-321-3600

RIDESHARING

Express your commute, call 2-RIDE for more information or visit http://www-r.llnl.gov/ tsmp.

Patterson - 2000 Dodge Ram 3500 Van/15-passenger commuter vanpool. I am moving; riders do not want to take over. Must sell. \$6,500obo. 209-892-2118, 2-9502

Riverbank or Oakdale -Looking for Vanpool or Carpool space 1 rider M-F hours adjustable. Starting June 20th. 209-529-0431, 2-8828

SERVICES

CONCRETE-foundations, custom, stamped, colored, sealing & more. Over 20 years experience. Free estimates. Lic #787092-B. 408-806-9816

INTERIOR, EXTERIOR PAINTING Low season rates, free estimates. Its a good time for painting before the weather gets too hot. 510-537-7222

Friday, June 3, 2005

POLLUTION

Continued from page 1

ded contributions to make a pollution prevention program. This is not just a one department activity."

Award winners included Mark Bronson, David Riley and Karen Dodson, for their efforts on the Lab's Plutonium Facility tilt pour furnace process, used in the pyrochemical processing of plutonium.

Traditionally, processing was performed with stationary furnaces and ceramic crucibles that could not be reused and would have to be disposed of as transuranic (TRU) waste after each run. The tilt-pour furnace utilizes crucibles that can be used for hundreds of runs before replacement is required, substantially decreasing the TRU waste stream generated while increasing operational safety and lowering costs.

Eliminating the discard of the ceramic crucible with each furnace use reduces the TRU waste generation rate by a factor of 50, Paul said. The tilt pour furnace also reduced potential worker radiation exposure by as much as 50 percent because hands-on operation is now minimal.

The second award went to Reggie Gaylord, Jody Drake and Pat Gallagher, of Chemistry Environmental Services and the Radioactive and Hazardous Waste Management Division, for their efforts to reduce the waste stream at the Nevada Test Site.

Chemistry Environmental Services is the Lab's on-site state certified environmental analytical laboratory, analyzing approximately 2,500 samples annually for waste characterization purposes. Due to a lack of process knowledge for analyzed samples, the waste produced by CES has traditionally been characterized on a "worst-



JACQUELINE McBride/Newsline

From left: David Riley, Karen Dodson, Mark Bronson, Jerald Paul (NNSA), Camille Yuan-Soo Hoo, Reggie Gaylord, Pat Gallagher, Jody Drake received two Pollution Prevention Awards from the Department of Energy's National Nuclear Security Administration. The Lab teams were presented the awards on Science Day.

case" basis as Resource Conservation Recovery Act hazardous mixed waste.

By instituting rigorous "up-front" waste characterization, including segregation of acutely/extremely hazardous materials, utilizing regulatory exemptions, and developing a novel radioactive characterization strategy, CES was able to receive approval for a certi-

fied low-level waste stream, adequately characterized for disposal at the Nevada Test Site. In the eight months of operating history, CES has diverted 44 percent of its waste (by mass) from mixed to low-level waste, resulting in an annual cost savings of \$213,000 and reduction in potential waste re-handling/personnel exposure.

CAVE BEAR

Continued from page 1

The results, published in the June 2 online edition of the journal *Science*, have now set the research community's sights on traveling back in time by DNA sequencing to reveal the story of other extinct species including our nearest relatives, the Neanderthals.

The JGI scientists overcame many of the difficulties normally associated with recovery of DNA from ancient samples. Nucleic acid starts degrading at death while microbes attack the decaying carcass to utilize the nutrients present in the dead organism as an energy source. What remains and confounds the efforts to sequence and characterize these artifacts is an overabundance of microbial contaminants along with the occasional DNA fin-

gerprints contributed unwittingly by the modern fossil hunters or lab workers.

"Among the limitations of previous ancient DNA studies was that they were restricted to mitochondrial DNA sequences," said Eddy Rubin, JGI director, in whose laboratory the work was conducted. "While mitochondria are great for learning about evolutionary relationships between species, to understand the functional differences between extinct and modern species we really need nuclear or genomic DNA, and nobody has been able to purify and sequence large quantities of DNA from these old samples."

It turned out that about 6 percent of the sequence from the sample yielded cave bear sequence — the rest represented a mosaic of microbial contaminants. Nevertheless within that fraction, there was a range of genomic sequence types, including fragments of 21

genes, identified by comparing the cave bear sample to the complete dog genome sequence. Dogs and bears, which diverged some 50 million years ago, are 92 percent similar on the sequence level.

"People immediately think about how this strategy could work for dinosaurs," Rubin said. Barring some fundamental misunderstanding about the nature of DNA decay, he says it is highly unlikely viable DNA will be recovered from 150 to 200 million year old Jurassic age samples.

First author on the *Science* paper was JGI postdoctoral fellow James Noonan, who joined JGI's Chris Detter and Doug Smith, and collaborators at the Max Planck Institute for Evolutionary Anthropology, Leipzig, Germany and the Institute of Paleontology, University of Vienna, Vienna, Austria.

SHARED HOUSING

Pleasanton - Beautiful, clean room with private bath and walk in closet in gorgeous townhome near Vineyard. 925-461-5045

Tracy - Room for Rent: \$450+1/2 utilities+small deposit; no pets/children/smoking; full privileges. 209-835-8249

TRUCKS & TRAILERS

1996 - Ford Ranger XLT, extra cab, good running, bedliner, long bed, cassette. 5,300.00 OBO 510-537-

7222

1997 - Ford F-150 XLT Extended cab 102K miles a/t, 100k tune up, tow package, p/w,p/l, c/c, p/m \$ 7,500 209-824-9549

1988 - Nomad 5th wheel trailer, 29 foot. Good condition, \$5,000.00 of best offer. 925-961-1658

2002 - Jeep Sahara White and Tan Hard/soft top. 20k miles great shape.pluse have transferable maintenace contract.asking 17,600 925-606-1972

VACATION RENTALS

Mendocino/Ft. Bragg - -Ocean View - large 4bd/4.5ba home in private neighborhood, large yard, hot tub, courtyard, deck, sleeps 10-12, \$475/2nts, pets ok w/ deposit 925-455-5942

SOUTH LAKE TAHOE - 3 Bedroom 2 Bath Chalet, nicely furnished, quiet area, park with Lake, tennis, etc., Great for family vacation. RESERVE NOW! 209-599-4644

Soooo cute beach cottage in

Santa Cruz near boat harbor. 2 bedr,2 bath, spa. 4blks to ocean. 1 mile to boardwalk. Lots of fun! 925-245-1114

Cozy mountain cabin near Arnold. 4 bedr, 2 bath, Near hiking, fishing, boating. Lots of outdoor activities. Plan ahead for summer. 925-245-1114

Pinecrest - (Off Sonora Pass Road), 3 bdrm/2 bath, frplc w/wood, microwave, dishwasher, pool table, large deck and view up No. Fork of Tuolumne, \$195/wknd. 925-449-5513 MAUI - 1 year house exchange. Perfect opportunity to see what its like to live in paradise for longer than a short vacation. 925-449-4003 925-449-4003

WANTED

Wanted: 24 inch girls bike. Very good condition please. 925-706-2088

Did you record the season finale/last ever episode of Third Watch from 5/6/05. My TIVO goofed and I would like to borrow your recording. 209-892-2118



LLNL'S WILD SIDE By Lisa Paterson

Site 300 annual spring photo safari



Site 300 management has a tradition of hosting a Photo Safari each spring. The Photo Safari is open to the staff of Site 300 and their guests. Participants have the rare opportunity to hike in some of the remote canyons of Site 300 and photograph the beautiful natural environment found in these areas. This year, early on a rainy Saturday morning, the Photo Safari group was led by Jim Lane, Site 300's manager, through Elk Ravine and its tributary canyons (located in the eastern portion of Site 300).

CLIMATE

Continued from page 1

aerosols) and natural external facings (solar irradiance and volcanic aerosols). Models run with natural forcings only cannot explain the observed ocean warming.

The new research appears in the June 2 edition of the online publication *Science Express*.

"This is perhaps the most compelling evidence yet that

global warming is happening right now and it shows that we can successfully simulate its past and likely future evolution," Barnett said.

PCMDI scientists Krishna AchutaRao, Peter Gleckler and Benjamin Santer are coauthors on the *Science Express* paper.

The researchers used fingerprinting, a technique that climate modelers use to determine how different climate forcings affect temperature. A climate model provides the physically-based estimates of the shape, size and evolution of the fingerprint. The fingerprint is then searched for in observational climate records, which helps researchers quantify the connection between the model fingerprinting and observed patterns of climate change.

In all major ocean basins, the warming signal



Changes in the global climate

found in the upper 700 meters shown in the models corresponded to the actual observed measurements

"The fact that models reproduce this fine structure suggests that they successfully capture some of the physical mechanisms involved in the penetration of the ocean warming signal," Santer said.

The discovery has wider implications across the atmosphere and land. The scientists conclude that in the decades ahead, the changes will be felt in regional water supplies.

In the next 20 years, the western United State's snowpack resources could be reduced causing a significant impact on the supply of water in California and other western states, Barnett said.



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